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GEOGRAPHICAL RECORD.

AMERICA.

THE HUDSON-FULTON EXHIBITION AT THE SOCIETY'S HOUSE.—At the request of the Hudson-Fulton Celebration Commission a collection of books, maps, etc., relating to Henry Hudson, Robert Fulton and their times, was placed on exhibition in the lecture hall of the building of the American Geographical Society, to continue during the period of the celebration. A catalogue of 40 pages was also prepared containing fac-simile reproductions of title-pages from the books of Hessel Gerritsz and of Purchas, and a frontispiece reproduction of part of the text describing Hudson's fourth voyage as printed on the back of the Gerritsz chart in 1612, believed to be the first description in print of any of Hudson's voyages. The catalogue is alphabetical, but the exhibit is arranged, as far as practicable, in chronological order. Beginning with a description of Verrazano's entrance into New York Bay, a map (reprint) is shown which gives "R. de s.: antonio," the early name for Hudson River, and another map in Wytfliet giving "R. de gamas," by which name the Hudson was also called by the Spaniards. A portion of a reprint of a "*Map of the World*" by Jodocus Hondius is shown on which occurs a mention of Hudson (1611), "*Glacies ab Hudsono detect Anno 1608*," believed to be the first record in print. A reprint of the book of Hessel Gerritsz is shown, and the originals of "*Purchas his Pilgrimage*," 1617, and "*Purchas his Pilgrimes*," 1625, the latter containing a map on which "Hudson's R." is marked, the first known application of the name in print. A copy of the first edition of De Laet's "*Nieuwe Wereldt*," a very rare volume, 1625, is also in the exhibit and a map of the same period by Abraham Goos, 1626, showing, "*Hudson's Rio*." In addition there are many volumes and maps by Heylyn, Monsen, Blaeu, Visscher and others relating to the Hudson period, while in the field of Fulton, Coldern's "*Life of Fulton*" and the plagiarization of it by Reigart are shown. A volume of the work by Parkinson, "*A Tour in America*," which so roused Fulton's ire, is also shown and there are many works relating to Fulton and his inventions, in one of which is stated Fulton's prediction that "steam carriages" would eventually cross mountains as easily as a stage coach could run on a level way. Catalogues may be had on application.

WRECKED IN THE COLORADO CANYONS.—On June 12th Messrs. Tom Martin and J. B. Woodward of St. Louis started from Green River, Wyoming, to descend the Green and Colorado Rivers in a specially constructed row-boat, over the course followed by Major Powell in his voyages of 1869-1872. Mr. Martin writes to a friend: "We were completely wrecked in the Lodore Canyon, barely escaping with our lives. We spent three days and three nights in the canyons without shoes, having only a pair of trousers and an undershirt each, one side of raw bacon, no matches and no place to sleep. We at last reached Linwood, Utah."

SOIL SURVEY OF MISSOURI.—The U. S. and Missouri Soil Surveys will co-operate in the survey of the soils of Missouri. Professor C. F. Marbut, director

of the Missouri Survey, will be in charge, and each survey party will consist of a man from the Federal and another from the State survey. The Federal survey will meet the expenses of publication. It is expected that from four to five counties will be surveyed each year.

AFRICA.

THE MUFUMBIRO VOLCANOES.—The paper read by Major R. G. T. Bright, of the British-Belgian Congo Boundary Commission, before the Royal Geographical Society, on June 14, 1909, says that the positions of eight of these volcanoes were trigonometrically fixed by the Commission. The volcanoes lie between lat. $1^{\circ} 20'$ and $1^{\circ} 30'$ S. The altitude obtained for the highest peak, Karisimbi, was 14,794 feet. The volcanoes were quiescent, with the exception of one lying a considerable distance to the southwest. Dense volumes of smoke rose from it and the flame was visible at night from Katwe. Owing to the clearness of the atmosphere during the rainy seasons, Mufumbiro can be seen from the north for at least 120 miles. This name is applied to the whole of the volcanic region by the natives living to the north. The name is derived from three Bantu words meaning "Cook in place," and is given to the volcanoes on account of the smoke issuing from their craters.

CHANGES IN AFRICAN NOMENCLATURE.—On his expedition across Africa for the relief of Emin Pasha, Stanley gave the name of Albert Edward to the large lake to the south of Lake Albert. It has been found that the application of the name Albert to both of these lakes has given rise to some confusion between them. King Edward has therefore approved of a proposal to call Lake Albert Edward simply Lake Edward; and the northeastern extension of this lake will hereafter be known as Lake George, after the Prince of Wales.

DEMARCATION OF THE BELGIAN CONGO-UGANDA BOUNDARY.—Difficulty has, for some time, existed over the boundary between the Belgian Congo and the Uganda Protectorate. The original agreement was concluded at a time when the districts concerned were very little known and it was then decided that the 30th meridian should be taken as the boundary. In 1902, the Anglo-German Boundary Commission, which delimited the line between Uganda and German East Africa, discovered that the 30th meridian was actually about 11 miles to the east of where it had been supposed to be. The Belgian Government at once claimed all the intervening country, a strip about 11 miles wide and 150 miles long. The British Government declined to recognize this claim, but it was agreed that, pending the exact location of the 30th meridian by a joint Boundary Commission, neither Government should exercise any active authority in the disputed zone. The joint British and Belgian Commission has now completed the demarcation of the boundary along the 30th meridian, and the controversy is at an end, which is fortunate, as the withdrawal of all European authority in the disputed district had thrown it back into anarchy and it became the refuge of criminals and disaffected natives. Major Bright, the head of the British survey party, describes the regions traversed in making the survey, in the *Geographical Journal*, Aug. 1909.

EUROPE.

THE ELEVENTH INTERNATIONAL GEOLOGICAL CONGRESS.—The Committee which is arranging for this Congress, whose next meeting will be at Stockholm in 1910, reports further that there will be submitted to the Congress certain broad questions capable of being illustrated by the study of Swedish geology. Among these questions are: The Geology of the Archæan formations; changes of climate since the maximum of the last glaciation; and the extent and distribution of the World's iron-ore deposits. The special topic in regional geology will be the geology of the polar regions, and an excursion which will be provided to Spitzbergen will give the members an opportunity to see a part of them. The Congress will be opened about Aug. 18, but many of the excursions will begin about July 25.

POLAR.

SHACKLETON PROBABLY COMING TO AMERICA.—It is now expected that Lieutenant Shackleton will visit this country in the latter part of March for a lecture tour, the proceeds of which will be devoted to fitting out his next Antarctic expedition. His numerous engagements in continental Europe will occupy his time till he sails for America. He has proven to be an accomplished platform speaker, he has a great story of exploration to tell and his illustrations are excellent. The British government decided, in August last, to contribute the sum of \$100,000 to defray the indebtedness which Shackleton incurred in fitting out his first expedition. In a letter communicating the decision of the Government to Lieut. Shackleton, the Prime Minister said:

The Government has been induced to take this course as they are much impressed both by the great value of the discoveries made in the course of your voyage and by the efficient and economical manner in which the whole of the enterprise was conducted, as is shown by the fortunate return of your entire party, and by the comparatively small total outlay incurred.

IN THE CANADIAN ARCTIC.—A note has been received from Mr. H. V. Radford from Fort McPherson, near the head of the Mackenzie River, dated July 13th. He started in February last from this city to visit the North West Territories of Canada, especially to study the wood bison and other large fauna. He reports that no whale ships spent last winter at Herschel Island. He expected to return south soon to resume the study of the wood bison at Fort Smith, and intends next year, to enter the Barren Grounds, northeast of Great Slave Lake.

DR. BRUCE'S NEW EXPEDITION TO PRINCE CHARLES FORELAND.—The Glasgow *Herald* announced (July 10, 1909) that Dr. William S. Bruce, of the Scottish Oceanographical Laboratory, had chartered the steam trawler Conqueror, at Leith, and was having her refitted for a scientific expedition to Prince Charles Foreland, Spitzbergen. In association with the Prince of Monaco, Dr. Bruce carried on two seasons' exploration work, especially as regards the topography, geology, botany and zoology of this interesting and little known island. He communicated papers to various scientific bodies on the results of these expeditions. The present expedition is a continuation of that work. He was to take with him a strong scientific staff, including Mr. J. V. Burn Murdoch, F.G.S.; Mr. John Mathison, of the Ordnance Survey Staff, Scotland, who was to act as chief surveyor; Dr. R. N. Rudmore Brown, late of the Scotia; Mr. Ernest A. Miller, who accompanied him on his first expedition to Prince Charles Foreland, and who

has since, under the auspices of the Argentine Republic, acted as meteorologist at a station in Scotia Bay, South Orkneys. Mr. Alastair Geddes, son of Professor Patrick Geddes, also accompanied the expedition.

CLIMATOLOGY.

ANTARCTIC CLIMATE.—The recent Antarctic expeditions have brought back a splendid body of meteorological material which is being worked up, and published, with satisfactory promptness. The latest discussion along this line is by Dr. Ludwig Mecking, in *Petermanns Mitteilungen* for May, 1909, in which some of the results collected by the German Expedition in the "Gauss" are summarized. As a part of the final report of the scientific work of the "Gauss" Expedition, there have been prepared a series of synoptic daily weather maps for the period 1901-04, covering the area between latitudes 30° and 60° S. Dr. Mecking has obtained mean pressures for the summer (December, 1902, February, 1903); winter (June-August, 1902), and year (October, 1901-March, 1904), and gives isobaric charts showing his results. Many interesting facts are brought out by these new charts. The low pressure north of the Antarctic Circle is seen not to be a simple, uniform ring, but there is a tendency to the development of two local minima, one in Weddell Sea and one west of West Antarctica, which is over what may be called the Belgica Sea. Between these two minima the Antarctic anticyclone stretches across the land area in the form of a wedge, tending to unite with the tropical high pressure belt over South America. The seasonal and annual changes in the positions of these centers of high and low pressure, and in the gradients, make it possible to explain many of the special meteorological conditions which have been recently reported by the various Antarctic expeditions.

R. DEC. W.

FLUCTUATIONS OF THE SEA OF ARAL.—In a recent review of the work of L. S. Berg, on the Sea of Aral, Dr. A. Woeikof summarizes the facts which are now at hand regarding the fluctuations of the water level of that sea (*Pet. Mitt.*, IV, 1909). There is evidence of climatic fluctuations, with a longer period than that of Brückner, probably at least sixty years long. Yet the author does not by any means claim that there is a period. Recently there was a general belief in a progressive desiccation in Central Turkestan. But so far as western Turkestan is concerned, such a general desiccation cannot be thought of. Climatic fluctuations there are, but it is not yet clear whether they are periodic or non-periodic.

R. DEC. W.

IS THE EARTH DRYING UP?—In the *Monthly Weather Review* for Dec., 1908, Prof. Cleveland Abbe makes the following answer to the question, "Is the earth drying up?":

As for the secular diminution of rainfall, we venture to assert that neither meteorology, nor geology, nor any other branch of geognosy gives clear, unimpeachable evidence of the progressive drying up of our globe as a whole. The fact that great glaciers, lakes and rivers once covered regions now free from them merely shows that in such regions there was once a different relation than now exists between rainfall, snowfall, evaporation, and run-off, so that snow accumulated then more than now. At the present time there is more rain and less snow, or possibly more snow and more melting (possibly due to changes in altitude), so that the snow cannot accumulate. . . Glacial phenomena tell us nothing whatever as to the absolute quantity of rain or snow. We think it is safe to say that no

great changes in oceans, continents or plateaus, arctic or antarctic, are likely to have made any correspondingly great change in the rainfall of the globe as a whole, and that therefore the globe is not now slowly drying up.

R. DEC. W.

CHANGES IN THE MONTHLY WEATHER REVIEW.—Dr. Cleveland Abbe, editor of the *Monthly Weather Review*, announces that, beginning with the issue for July, 1909, the *Review* will be restricted to statistical tables of general climatological data for the whole of the United States. The relatively small amount of accompanying text will summarize the weather conditions of the month in the different districts. It is thus evident that hereafter the *Review* will be of value only to those advanced students of climates, engineers, etc., who need detailed data for their own discussion.

Few papers of general interest to teachers, except as relate to climatology, will be published in the *Review*, and the scope of the articles will be limited to technical treatment of subjects of advanced research. This will make the *Review*, in Educational Circles, appropriate only for the libraries of colleges and universities.

ECONOMIC GEOGRAPHY.

INFLUENCE OF STATE-OWNED RAILROADS UPON COMMERCE.—While the higher cost of raw materials and labour in Germany are tending to diminish the competitive power of German manufacturers in the world's markets, the cost of transportation on the state railroads is working to their advantage. The system of state railroads has given to the Prussian and other German Governments the power to help manufacturing trades that may especially need assistance by giving them exceptional freight rates. Some industries in Germany have thus been actually kept alive, as, for example, the artificial stone industry, using as material artificial sand near the lower Rhine; other industries have derived much advantage, as, for instance, by the exceptionally low rates for the carriage of coal from the Rhenish-Westphalian coal districts to the Lahn and other places where iron ore is mined. The Tariff Board is chiefly engaged in examining the claims of applicant industries to have their goods included in cheaper sections of the railroad tariff. (*Report of the British Consul-General at Frankfort on Main*).

PHYSICAL GEOGRAPHY.

GLACIER MARGIN PHENOMENA IN ALASKA.—Prof. R. S. Tarr of Cornell University, after studying glaciers in Greenland, in the Alps, and in Alaska, finds that the ice tongues of the last locality throw the most light upon the interpretation of glacial deposits in United States (*Zeitschrift für Gletscherkunde*, Band III, 1908, 81-110). This seems to be largely due to the fact that in Alaska many moderately large ice sheets end on the land in a cool, temperate climate near sea level.

He presents facts from the Yakutat Bay region near Mt. St. Elias, where mountains 15-18,000 feet high rise from the ocean and where on-shore winds bring 190 inches or more of rain and snowfall annually. This results in large areas of snow fields and in many ice tongues, some of which are tidal and discharge icebergs, some end on the land, and some unite as piedmont glaciers whose stag-

nant margins, blanketed by moraine, support forests, as Russell previously described on the Malaspina glacier.

The deposits on the glaciers (ablation moraines), the alluvial fans (formed by outwash in front of the melting glaciers), the kettle holes (being formed in these by slumping ice beneath), the subglacial eskers, the kames, the marginal channels, deposits of earlier ice advances, marine deposits, etc., are fully described. The complexity of marginal deposits through alternation of conditions, and especially in connection with the great advance started in 1905 and 1906 as a result of the 1899 earthquakes, is of especial interest. Professor Tárr shows conclusively that deposits, exactly analogous, except in weathering, to those which have been interpreted in the United States and Europe as evidence of interglacial conditions with complete deglaciation, are being formed to-day in the Yakutat Bay region. Peat has accumulated, soils have formed, and trees have grown on or close by ice sheets whose advance is now burying them with till.

He concludes that the Alaskan glaciers are of greater importance than those of Greenland, the Alps, Spitzbergen, etc., in presenting conditions analogous to those of waning continental ice sheets, because of the lessons taught concerning phenomena associated with the wasting of stagnant ice.

L. M.

EARTHQUAKE FORECASTS.—As his Presidential address before the Association of American Geographers at Baltimore, Dr. G. K. Gilbert discussed earthquake forecasts (*Science*, Vol. XXIX, 1909, 121-138). He dealt with earthquake prediction with regard to place and to time. Having considered (a) experience, (b) bold and high ranges, (c) rifts and (d) geologic formations in relation to the *loci* of earthquakes, he showed that many mallo seismic areas, or "localities likely to be visited several times in a century by earthquakes of destructive violence," are known "from records of past experience, and others are being recognized by physiographic characters. Within them are tracts of special instability because of the incoherence of the underlying formation, and these can be both characterized in general terms and locally mapped. The general relations of danger to space are so well understood that an early solution of their outstanding problems may be assumed."

The less satisfactory relations of earthquake forecasting were attacked by use of the ideas of (a) rhythm, (b) alternation, (c) trigger or starter, and (d) prelude. Dr. Gilbert concluded that "the hypothesis of rhythmic recurrence has no sure support from observation, and is not in working order for either large or small areas. Its corollary of local immunity after local disaster is more alluring than safe. The allied hypothesis of alternation between parts of a district is being tested by a great example, but the verdict belongs to the future. The hypothesis of precipitation by accessory forces which are in large part periodic and foreknown, has a good status and is being developed on the statistical side. It promises to make the date of prediction more precise if ever the approximate time shall be achieved by other means. The hypothesis of an intelligible prelude has barely been broached and the means to test it are not yet in sight. In a word, the determination of danger districts and danger spots belongs to the past, the present, and the near future; the determinations of times of danger belong to the indefinite future. The one lies largely within the domain of accomplishment; the other still lingers in that of endeavour and hope."

The moral drawn from these considerations by Dr. Gilbert is that it is "the duty of investigators—of seismologists, geologists and scientific engineers—to

develop the theory of local danger spots, to discover the *foci* of recurrent shocks, to develop the theory of earthquake-proof construction. It is the duty of engineers and architects so to adjust construction to the character of the ground that safety shall be secured. It should be the policy of communities in the earthquake districts to recognize the danger and make provision against it." L. M.

VARIOUS.

HIGHEST ALTITUDE ATTAINED BY MAN.—The London *Times* reports that on Aug. 12, the Italian balloon Albatross, manned by Lieut. Mina and Signor Piacenza and starting from Turin, reached a height of 38,715 feet, at which point they opened the valve and began their descent. The highest altitude previously in a manned balloon was 35,500 feet, reached by Berson and Süring on July 31, 1901. The new record is equivalent to an altitude of 7.3 miles and shows the great heights that may now be attained by using the improved means of respiration that have been introduced within the past few years.

PERSONAL.—Professor R. C. Allen, of the University of Michigan, has been elected State Geologist to succeed A. C. Lane, who resigned the position to accept a chair in Tufts College.—Dr. W. F. King, chief astronomer of the Dominion of Canada, is at the head of the Geodetic Survey Department recently established by the government.—Dr. Heinrich Ries, professor of economic geology at Cornell University, will make a survey of the clay deposits of Canada by arrangement with the Canadian government.—Professor H. E. Crampton, of the American Museum of Natural History, made his fourth voyage to the Society Islands this summer. Thence he will go via Cook Islands to New Zealand, Tonga Islands and Samoa and will return by way of the Fiji Islands and Hawaii, arriving in this city in January next.—Professor Joseph P. Iddings, who prepared, during the past year, the first volume of his work on igneous rocks, has been spending the past summer in parts of Japan, China, the Philippines and Java, under the auspices of the Smithsonian Institution, for the purpose of studying the volcanic rocks of those regions in order to complete the second volume or descriptive part of his book.—Professor J. Paul Goode had a comprehensive article, "The Story of the Manchester Ship Canal," in *The World To-day* for June.—Mr. Frederick Monsen has been making ethnological researches among the desert Indians of Chihuahua and Sonora. Late in July he expected to visit Arizona for study among the Hopi and Navajo Indians, and after three months in their homes he planned to go to the Grand Canyon and try to photograph it by means of kites flying about 6,000 feet above the surface of the river. He will return to New York in November.—Mr. G. D. Harris has been appointed professor of paleontology and stratigraphic geology at Cornell University.—Dr. C. R. Beazley, author of the great work "Dawn of Modern Geography," has been appointed professor of History at Birmingham University, England.—Mr. H. Wichmann has succeeded to the editorship of the statistical parts of the *Almanach de Gotha*, formerly in charge of Prof. Dr. A. Supan.—Prof. Dr. Oskar Lenz, Professor of Geography at the University of Prague and well known for his extensive travels through the Sahara and in West Africa, has gone into retirement on account of long illness. He is now living at Sooss-Baden near Vienna.—Dr. Georg Gerland, professor of Geography at Strassburg, has retired from active service.